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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,356	10/24/2003	Shlomo Assa	06155-113001	2723
20985	7590	08/18/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			PHAM, HAI CHI	
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			2861	

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/693,356	Applicant(s) ASSA ET AL.	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 17-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Clement et al. (US 5,653,900).

Clement et al., an acknowledged prior art, discloses in Figs. 1-3 a dynamic laser marking system comprising a first mirror (first mirror 68) to reflect an incident light beam to form a first reflected light beam, a first actuator (first galvanometer 72) attached to the first mirror, the first actuator being operable to tilt the first mirror and vary an angle of reflection of the first reflected light beam, wherein the first actuator and the first mirror control scanning by the second reflected beam in a direction perpendicular relative to a direction of movement of an object (moving body 26), the movement occurring during the scanning of the object by the second reflected beam (the first mirror 68 is actuated by the first galvanometer 72 causing the incident beam to be reflected from the first mirror and via the reflection from the second mirror 70 to scan the moving body 26 in the vertical plane perpendicular to the horizontal movement direction of the body 26), a second mirror (second mirror 70) to reflect the first reflected light beam to form the second reflected beam, the second mirror directing the second reflected beam toward the object, and a second actuator (galvanometer 74) attached to the second mirror, the second actuator

being operable to tilt the second mirror and vary an angle of reflection of the second reflected light beam, wherein the second actuator and the second mirror control scanning by the second reflected beam in a direction parallel relative to direction of movement of the object (the second mirror 70 is actuated by the second galvanometer 74 causing the reflected beam from the first mirror to be reflected therefrom to scan the moving body 26 in the horizontal plane parallel to the movement direction of the body 26) (col. 5, lines 40-42 and col. 6, lines 17-28).

The method claim 19 is deemed to be clearly anticipated by functions of the above structures.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-12, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (U.S. 6,066,829) in view of Kurosawa (US 6,107,600).

With respect to claims 1 and 3, Ishikawa discloses a laser marking system and method for printing a spot on an object, the method comprising reflecting an incident light beam (LM) by a starting angle to form a first reflected light beam (Fig. 3), varying the [starting] angle of reflection of the first reflected light beam by a pre-determined amount (by controllably rotating the first reflecting mirror 52 as shown by the double head arrow

AA'), reflecting the first reflected light beam to form a second reflected beam (e.g., by reflecting the first reflected beam using the second reflecting mirror 54), varying the [starting] angle of reflection of the second reflected light beam (by controllably rotating the first reflecting mirror 54 as shown by the double head arrow BB'), and directing the second reflected beam to form a spot on an object (the beam reflected by the second reflecting mirror 54 being directed toward the workpiece W).

With respect to claims 4 and 17, Ishikawa discloses a first mirror (52), a first actuator (X axis galvanometer 56) attached to the first mirror, a second mirror (54), a second actuator (Y axis galvanometer 58) attached to the second mirror, and a controller (control 38) coupled to the first and second actuators (via electric cables 62, 64), the controller controlling the first actuator to cause the first mirror to reflect an incident light beam by a starting angle of less than ninety degrees to form a first reflected light beam, the first actuator being operable to tilt the first mirror and vary the starting angle of reflection of the first reflected light beam by a predetermined amount, the controller controlling the second actuator to cause the second mirror to reflect the first reflected light beam to form a second reflected beam, the second mirror directing the second reflected beam to form a spot on an object, the second actuator being operable to tilt the second mirror and vary an angle of reflection of the second reflected light beam by a predetermined amount (the respective swing angles of the first and second mirrors being predetermined by the X and Y-direction scanning control signals) (col. 7, lines 2-15).

However, Ishikawa fails to explicitly teach the starting angle of the first and second reflected light beams being less than ninety degrees.

Kurosawa discloses a laser machining apparatus comprising a first deflecting mirror (14) for reflecting the laser beam LB at a starting reflected angle of 90 degrees (the starting incident angle of the laser beam on the first mirror 14 being 45 degrees) and being tilted by the first galvanometer scanner (18) by a predetermined angle α such that the reflected beam is received by the second deflecting mirror (16) without overflow, the reflected laser beam from the first mirror is then reflected by the second deflecting mirror (16) as it is tilted by the second galvanometer scanner (22).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to control the start angle of the reflected light beam by the mirrors in the device of Ishikawa in the manner as taught by Kurosawa for the purpose of limiting the first reflected light beam within the receiving area of the second mirror as well as limiting the exposed light beam within the required exposure area.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the start angle of the reflected light beam on the first and second mirrors at less than ninety degrees as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With respect to claims 6-7 and 10-11, Ishikawa in view of Kurosawa discloses the claimed invention except for the first and second mirrors reflecting the respective incident light beam by sixty degrees and the angle of reflection of the first and second reflected light beam to be varied by less than 10 degrees. However, such reflecting angle would be set optimally depending on the size of the printed area. It would have been obvious to

one having ordinary skill in the art at the time the invention was made to set the reflecting angle of the laser beam as claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to claims 8-9, Ishikawa discloses the first and second mirrors (52 and 54) scan the laser beam LM in the X and Y directions and the workpiece W being disposed flat on a horizontal plane. It is clear that the printing by the second reflected beam would be in a vertical and a horizontal direction if the object were disposed vertically with respect to the second reflected beam. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to appropriately arrange the object to be printed with respect to the incident exposure beam so as to have the exposure beam to scan horizontally and vertically, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

With respect to claim 16, Ishikawa discloses the power of the laser beam being controlled so as to form characters on the workpiece but does not explicitly teach the laser source being a 10-Watt laser. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a laser source of appropriate power as claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Ishikawa further teaches:

- the second reflected light beam is configured to alter an optical characteristic of a spot on the object (col. 1, lines 15-23),
- wherein second reflected light beam comprises a printing beam (LM) and a print zone beam (LG), the printing beam forming symbols (e.g., alphanumerical characters) on the object, the print zone beam outlining a visually observable zone of printing on the object (the laser guide beam LG guiding and delimiting the area to be printed),
- electronics (control 38) to control the actuators to move the first and second mirrors such that the second reflected beam is directed to a plurality locations on the object,
- the actuators move the first and second mirrors to direct the second reflected beam to form at least one alphanumeric symbol on the object (Fig. 14).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Kurosawa, as applied to claim 1 above, and further in view of Woelki et al. (U.S. 5,329,090).

Ishikawa, as modified by Kurosawa, discloses all the basic limitations of the claimed invention except for the print pixel on the object comprising a plurality of spots.

Woelki et al. discloses a laser marking device for printing alphanumeric or bar-code characters on a silicon wafer, each character is formed of a plurality of pixels (macrogrids 60), each pixel comprising a plurality of dots (or dimples 57) (Fig. 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to print pixel on the object comprising a plurality of spots in the device of Ishikawa as taught by Woelki et al. The motivation for doing so would have been to produce easily readable marking on the object as suggested by Woelki et al. at col. 3, lines 24-27.

6. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clement et al.

Clement et al. discloses the claimed invention except for the first and second mirrors reflecting the respective incident light beam by varying the angle of reflection through a range of angles greater than 45 degrees and less than 90 degrees, exclusive of 45 and 90 degrees. However, such varying reflecting angle would be set optimally depending on the size of the receiving area of the second mirror as well as the size of the printed area. It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the first and second reflecting angles of the laser beam as claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

7. Applicant's arguments with respect to claims 1-12 and 17-23 have been considered but are moot in view of the new grounds of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM
PRIMARY EXAMINER

August 17, 2006